

HINDBRAIN MODULATION OF AUTONOMIC FUNCTION AND BEHAVIOR: AN OVERVIEW. Gaylen L. Edwards, Department of Physiology and Pharmacology, College of Veterinary Medicine, University of Georgia, Athens, GA 30602.

Many visceral reflexes are mediated by neural substrates in the medulla oblongata. Recent studies indicate that hormones such as vasopressin or angiotensin may act in the area postrema (AP) to modulate visceral reflexes. For example, vasopressin has been demonstrated to augment baroreflex control of heart rate (Circ. Res. 56: 410, 1985; Am. J. Physiol. 258: H1255, 1990). On the other hand, angiotensin is reported to facilitate sympathetic function by an action in the AP of dogs (Clin. Sci. 44: 417, 1973). Given the density of binding sites for many hormones in the AP and adjacent nucleus of the solitary tract (NTS) there is a strong potential for interaction of circulating peptide hormones with visceral afferent and efferent signals. Furthermore, forebrain projections from the AP and NTS provide a substrate for modulation of behavior by substances acting in the hindbrain. Our laboratory is interested in this possibility. To this end, we have examined the effect of lesions in the dorsal hindbrain on water and sodium intake. Earlier studies indicate that lesions of the AP result in increased intake of water after treatment with angiotensin II or pharmacologic activation of the renin-angiotensin system (Physiol. Behav. 29: 943, 1982). Interestingly, it has also been noted that bilateral lesions of the lateral parabrachial nucleus (IPBN) also cause increased drinking to activation of the renin-angiotensin system (Am. J. Physiol. 251: R504, 1986). Since neurons in the AP project directly to the IPBN, these data suggest that a hindbrain system involving the AP and IPBN exists to modulate water intake. Recent studies utilizing asymmetric lesions between the AP and IPBN strongly support this possibility. Although the neurotransmitters involved in this phenomenon remain to be elucidated current studies are aimed at identifying these factors.